

Effect of a 12-week yoga therapy program on mental health status in elderly women inmates of a hospice

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ABSTRACT

Aim and Objectives: This study was undertaken to evaluate the effectiveness of yoga on the mental health status of elderly women inmates residing in a hospice in Puducherry.

Materials and Methods: Forty elderly women were randomly divided into yoga and wait-listed control group. A yoga therapy program of 60 min was given twice a week for 12 weeks. This protocol was specially designed for senior citizens, keeping in mind their health status and physical limitations that included simple warm-up and breath-body movement coordination practices (jathis and kriyas), static stretching postures (asanas), breathing techniques (pranayamas), and relaxation. Hamilton anxiety scale for measuring anxiety, Hamilton rating scale for depression, and Rosenberg self-esteem scale to measure self-esteem were administered to both groups before and after the 12-week study period. Data were assessed for normality, and appropriate parametric and nonparametric statistical methods were applied for intra- and inter-group comparisons.

Results: Overall, intra- and inter-group comparison of prepost data showed statistically significant ($P < 0.001$) differences for all three parameters. There was an overall improvement in the scores indicating decreased levels of depression and anxiety coupled with an increase in the level of self-esteem after the yoga therapy program.

Discussion: The influence of yoga in the reduction of depression and anxiety scores and improvement in self-esteem scores in elderly women subjects is evident from this study. As reported in earlier studies, this may be attributed to changes in central neurotransmitters such as gamma-aminobutyric-acid coupled with increased parasympathetic tone and decreased sympatho-adrenal activity.

Conclusion: It is recommended that yoga should be a part of health-care facilities for elderly as it can enhance the quality of life by improving their overall mental health status. It could provide a healthy and positive alternative from depressing negative thoughts, and give them a sense of purpose and hope.

Key words: Elderly; hospice; psychological wellbeing; yoga therapy.

INTRODUCTION

Mental health problems such as depression, anxiety, and insomnia are among the most common reasons for individuals to seek treatment with complementary therapies, and yoga appears to be a promising intervention as it is cost-effective and easy to implement.^[1]

According to the latest factsheet on depression from the World Health Organization (WHO), it is estimated that globally, 350 million people of all ages suffer from depression.^[2] Depressive disorders now rank second in terms of global disability burden according to a 2010 global

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burden of disease (GBD) study. Previous GBD studies in 2000 and 1990 had ranked depression as third and fourth, respectively.^[3]

Yoga has consistently yielded encouraging results in the treatment of generalized anxiety disorder and panic disorder and has also been shown to be effective in improving mood, decreasing symptoms of depression and trait anxiety in young and old patients.^[4] Physical activity has powerful mood-boosting effects and research suggests that it may be just as effective as antidepressants in relieving mental conditions without adverse side effects.^[5-7]

According to Hathapradipika, a traditional text on yoga, yoga can be done by people of any age and physical condition with beneficial results occurring from dedicated efforts (yuvavrddho ativrddho va vyadhito durbalo api va abhyasat siddhimapnoti sarvayogesvatandrita).^[8]

Javnbakht *et al.* evaluated the influence of yoga in relieving symptoms of depression and anxiety in women and found a significant reduction in perceived levels of anxiety.^[9] Joshi and De Sousa have also emphasized the benefits of incorporating yoga practice in the management of anxiety and depressive disorders.^[10]

During literature review, it was noticed that there are not many relevant qualitative research reports of the effect of yoga in elderly female population. As the WHO factsheet stated that more women are affected by depression than men and that exercise programs for elderly can also be effective in depression prevention, the present study was planned in elderly women of a hospice.^[11] A previous study by Ramanathan and Bhavanani assessed psycho-physical health status of elderly women residing in the same hospice in Puducherry and found that majority of them lacked adequate psychological health and were on borderline regarding physical health status.^[11] The deterioration of psychological health was more pronounced than physical health.

With the above considerations in mind, the present randomized controlled trial was planned to determine the efficacy of yoga in modifying depression, anxiety, and self-esteem that influences mental health status of the elderly female inmates residing in a hospice.

MATERIALS AND METHODS

After obtaining ethical clearance from Institutional Human Ethics Committee of Mahatma Gandhi Medical College and Research Institute, the authors approached the authorities and inmates of Hospice Convent Home for the Aged, Congregation of Saint Joseph of Cluny, Puducherry, to conduct the proposed study. They willingly volunteered to

take part and after obtaining informed consent from them, prerecording of psychological parameters was done using respective questionnaires.

Forty female subjects were randomly divided into yoga and control groups of 20 each by block randomization with block sizes of 4 each. Mean age of the subjects in experimental group was 68.90 ± 7.55 years and that of the wait-listed control group was 68.20 ± 8.78 years.

Individual health records of each participant were maintained at the hospice with regular check-up at the local Government Hospital. Three of them reported normal health status, whereas others reported that they were on regular treatment for one or more medical conditions such as hypertension (21), hypothyroidism (3), type 2 diabetes mellitus (19), knee pain (4), low back pain (11), asthma (5), dyslipidemia (9), and insomnia (12). None of the participants were receiving any specific medical treatment for either depression or anxiety as such.

The yoga group subjects underwent group yoga therapy sessions of 60 min, twice weekly for a period of 12 weeks conducted in the hospice. The wait-listed control subjects did not receive yoga therapy and continued their normal routine activities in the hospice. Since all subjects were inmates of the hospice, they all had a similar routine with regard to their day-to-day activities.

Baseline assessments were done prior to starting the yoga program and after the completion of the 12 weeks of therapy. Assessments were carried out by administering Hamilton Anxiety Rating Scale (HAM-A), Hamilton Depression Rating Scale (HAM-D), and Rosenberg self-esteem scale (RSES) to measure self-esteem.

The HAM-A questionnaire scale consists of 14 items, and measures both psychic anxiety and somatic anxiety.^[12] Subjects were instructed to select one of the five responses for each of the 14 questions that is then scored on a scale of 0 (not present) to 4 (severe), with a total score range of 0–56, where <17 indicates mild severity, 18–24 indicates mild to moderate severity, and 25–30 indicates moderate to severe.

HAM-D scale has 21 items, of which 8 items are scored on a five-point scale ranging from 0 to 4 (0 – absent; 1 – mild; 2 – moderate; 3 – severe; and 4 – very severe) and 9 items are scored on a scale ranging from 0 to 2 (0 – absent; 1 – mild; and 2 – definite).^[13] The last four items are not scored. Scores between 0 and 7 indicate no depression, between 8 and 13 indicate mild depression, between 14 and 18 indicate moderate depression, between 19 and 22 indicate severe depression, and scores equal to or over 23 indicate very severe depression.

The RSES scale has 10 items and is a Likert-type scale with items answered on a four-point scale from strongly agree to strongly disagree. Five items have positively worded statements and five have negatively worded ones. The scale ranges from 0 to 30, and scores between 15 and 25 are considered to be within normal range whereas scores below 15 suggest low self-esteem.^[14]

Randomization and analysis were done by one investigator while training was given by another to avoid bias. Psychological assessment was done by a clinical psychologist with a team of assistants. A senior statistician of the university aided in data analysis.

Participants practiced a yoga therapy protocol that was specially designed for senior citizens, keeping in mind their health status and physical limitations. This protocol used routinely, at the Centre for Yoga Therapy, Education, and Research (CYTER) and at the Advanced CYTER (ACYTER) in JIPMER, included simple warm-up and breath–body movement coordination practices (jathis and kriyas), static stretching postures (asanas), breathing techniques (pranayamas), and relaxation. The complete protocol is given in Table 1.

The program was conducted in a group setting as it has been previously reported that group mindfulness meditation training program can effectively reduce the symptoms of anxiety and panic.^[15] Further, the authors have found in earlier work that the elderly participants enjoy a feel of companionship and comparative assessment that manifests in group sessions. Such experiences are perceived to be lacking during individual therapy sessions.

Data entry was done and assessed for normality using GraphPad InStat version 3.06 for Windows 95 (GraphPad Software, San Diego California USA, www.graphpad.com). In data that passed normality testing by Kolmogorov–Smirnov Test, Student’s paired and unpaired *t*-tests were used for intra- and inter-group comparisons,

Table 1: Components of yoga therapy program

Jathis and Kriyas (warm up techniques)

Standing asanas

Tala asana
Ardhakati chakra asana
Kati chakra asana

Sitting asanas

Vakra asana
Paschimottana asana
Purvottana asana

Pranayamas

Chandra nadi
Vyagraha
Pranava

Relaxation in Shava asana

respectively. For data that did not pass normality testing, Wilcoxon matched-pairs signed-ranks test was used for intragroup comparison and Mann–Whitney test for intergroup comparison. $P < 0.05$ was accepted as indicating significant differences between compared data.

RESULTS

The results are given in Table 2. Overall, intra- and inter-group comparison of prepost data showed statistically significant ($P < 0.001$) differences for all the three parameters. No significant change was observed in the control subjects.

DISCUSSION

Chen *et al.* developed a yoga program (Silver Yoga) for institutionalized older adults in Taiwan and tested it in cluster randomized studies.^[16,17] They reported that yoga improved flexibility, walking speed, sleep quality, depression, and quality of life (QOL) among yoga participants. It was recommended that such a program should be incorporated as an activity program in assisted living facilities to promote the physical fitness of transitional frail elders. Another recent study of the benefits of yoga in lower-income older adults reported positive changes in pain frequency, functional status, depression, fatigue, and health-related QOL.^[18]

In line with the earlier studies mentioned above, results of the present study re-iterate the efficacy of yoga in enhancing QOL in elderly women. Yoga is a conventional long-established, time-tested art and therapeutic science that contributes positively to the maintenance of health, happiness, and general wellbeing. The influence and the efficacy of yoga therapy in reducing the levels of depression and anxiety and improving self-esteem scores in elderly women are documented by our results.

The finding of lower psychological health status in our subjects with depression, anxiety, and low self-esteem may be correlated to their being in a hospice away from the family. This may be the cause of inadequate state of psychological health that may be the first evidence of further worsening of physical health in near future.

An earlier report by Bhavanani *et al.* reported healthy improvements in cardiovascular parameters and indices in geriatric subjects following a single yoga session.^[19] This was attributed to enhanced harmony of cardiac autonomic function facilitated by co-ordinated breath–body work and mind–body relaxation in the yoga session. The yoga therapy protocol applied in the present study is of similar nature and thus may be producing the manifesting

Table 2: Depression, anxiety, and self-esteem scores in geriatric women at the beginning (B) and after (A) the 12-week study period in control and yoga groups with intergroup comparisons

	Control group (n=20)		Yoga group (n=20)		Intergroup comparison (P)	
	B	A	B	A	B	A
Depression	19.5 (17-33)	20.5 (16-35)	17.5 (14-37)	15 (7-22)***	0.12	0.0006
Anxiety (somatic)	14.5 (14-15)	14 (13-15)	15 (14-15)	10.5 (3-13)***	0.59	<0.0001
Anxiety (psychic)	15 (14-15)	15 (13-15)	15 (14-15)	11 (9-12)***	0.40	<0.0001
Anxiety (total)	29.5 (28-30)	29 (26-30)	30 (29-30)	21 (12-25)***	0.33	<0.0001
Self-esteem	6.30±1.13	7.10±1.25	6.75±1.33	23.20±1.24***	0.256	<0.0001

Values are given as median (range) for data not passing normality (depression and anxiety). *** $P < 0.001$ by Wilcoxon matched-pairs signed-ranks test for intragroup comparison. Actual P values are given for intergroup comparison by Mann-Whitney U-test in the last column. Values are given as mean±SD for data passing normality (self-esteem). *** $P < 0.001$ by Student's paired t -test for intragroup comparison. Actual P values are given for intergroup comparison by Student's unpaired t -test in the last column. SD = Standard deviation

psychological changes through similar mechanisms. This is supported by a previous report that yogic practices enhance body flexibility, promote and improve respiratory and cardiovascular function, promote recovery from addiction, reduce stress, anxiety, depression, and chronic pain, improve sleep pattern, and enhance overall wellbeing and QOL.^[20]

Imbalances of important neurotransmitters are implicated in depression, and researchers have shown that hormones directly affect brain chemistry that in turn influence emotions and mood.^[21] Previous studies have suggested a close association between increased thalamic gamma-aminobutyric-acid levels as well as increased parasympathetic activity (enhanced vagal tone) with improvements in mood and decreased anxiety.^[22,23] Similar inherent "self-healing" mechanisms may have been brought into play through the practices done in our yoga therapy program. This may have resulted in the present subjects' self-reported sense of "feeling" better that enhanced their self-esteem, and consequently manifested through reductions in both anxiety and depression.

Relaxation was an important component of this program, and brief periods of relaxation were given between the practice of different techniques. At the end of the session, a 15 min period of relaxation was given in shavasana with simple breath awareness. This may be contributing to enhanced autonomic balance by increasing parasympathetic drive while simultaneously reducing sympatho-adrenal over activity. The resultant calming effect on the stress response system could bring down the levels of anxiety and relieve depression as suggested by earlier reports on Sudarshan Kriya yoga and Vipassana meditation.^[24] These postulates are supported by previous evidence that integrated yoga practice produces multi-dimensional, immediate benefits on physical and mental health by homeostatic regulation of hypothalamic-pituitary-adrenal axis and sympathetic nervous system.^[25]

It is also important to state the changes in attitude brought about by the yoga program as all participants reported that they "felt" better, were more energized, and had a more

positive outlook toward the end of the study period. This may be attributed to a modulation of the stress response systems by a reduction in perceived stress and anxiety, which in turn, decreases physiological arousal.^[26] This is further supported by the finding of enhanced self-esteem in our yoga group at the end of the program. Enhanced self-esteem gives an optimistic outlook toward life and further enables one to face the challenges of life more efficiently and effectively. This, in turn, leads to a decrease of anxiety and depression resulting in a positive spiral of healthy thought, word, and action.

Although a wide range of different therapeutic approaches are available for the management of anxiety and depressive disorders, complementary therapies such as yoga are unique as they attempt to address the root cause of problems and are not merely limited to symptomatic management. Further, yoga offers a healthy philosophy that enhances the whole perspective of life, is cost effective, and produces beneficial effects without any unwanted side effects.

The present study is limited by the smaller sample size and the fact that the protocol was not validated by external experts though it was being used extensively at CYTER and earlier at ACYTER in JIPMER, Puducherry. It was also limited to a single center and used only questionnaires. Further, multicentric studies that explore functional changes in the nervous system with correlations between such changes, psychological variables, and biochemical markers may deepen our understanding of intrinsic mechanisms by which these positive psychological changes are occurring in yoga therapy programs. This would help strengthen our conclusion about the psycho-physiological benefits of yoga in a geriatric population.

CONCLUSION

This study offers evidence of yoga's potential as a complementary and adjunct therapy in the integrative, holistic management of elderly with depressive and anxiety symptoms who were living in a hospice. It is an attractive option because it is nonpharmacological,

has minimal adverse effects, and also enhances other aspects of physiological and psychological function to be enhanced in a positive manner. It enables the individual to be self-sufficient and take on responsibility for his own health and wellbeing. Such a sense of “doing something” for one’s “own self” will motivate the individual further, and they start to once again “take charge” of their lives.

Mental health can be improved through promoting active and healthy aging involving creation of positive living conditions and environment that supports wellbeing and healthy and integrated lifestyles. It is recommended that yoga should be a part of health-care facilities for elderly as it can enhance the QOL by improving their overall mental health status. It can provide a healthy and positive alternative from depressing negative thoughts and give them a sense of purpose and hope. They get something to look forward to and are motivated to get back on their feet. A sense of joy and jubilation manifests as they begin to be able to perform the simple practices, and as they slowly but steadily improve their own levels of performance, they regain their self-confidence. This strengthens the will to live and enjoy the sunset years of life to the fullest.

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Conflicts of interest

There are no conflicts of interest.

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